HP ProLiant DL145 G1 Lights-Out 100i Remote Management Processor User Guide

February 2005 (First Edition)
Part Number 384529-001

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Audience assumptions

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Operational overview

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Server management

The HP ProLiant DL145 G1 Lights-Out 100i Remote Management Processor delivers basic remote control of vital server resources, and supports IPMI 1.5. Throughout this document, you will also see the term "BMC," which is synonymous with remote management processor.

The ProLiant DL145 G1 Lights-Out 100i Remote Management Processor provides system administrators with access to the server at any time, even before an operating system is installed on the server. This remote management processor provides a text mode console redirection, IPMI CLI, and browser access to many of the same IPMI functions. You can access the remote management processor and the management features of the HP ProLiant DL145 G1 Server through a dedicated Ethernet over TCP/IP management port or through the integrated serial port.

Server management features

With the ProLiant DL145 G1 Lights-Out 100i Remote Management Processor, you can:

- Switch between console redirection and the CLI using either the dedicated management or serial port
- Remotely power on and off the server
- Perform warm or cold server reboots
- Remotely monitor server state voltage, fan speed, and system state (S0 or S5)

- Configure TCP/IP settings for the NIC
- Change user password
- Use the CLI to issue raw IPMI 1.5 commands
- Access command line help

Configuration

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Using the serial port

The server serial port provides basic serial port functionality and also serves as an interface to the remote management processor. You can share the serial port between the remote management processor and the rest of the system or configure the remote management processor not to use the serial port.

You must configure the remote management processor serial port hardware parameters to work with your respective serial port communications software. Remote management processor serial port configuration is controlled with BIOS Setup.

Sharing the serial port with the remote management processor

The serial port can be configured to work in two different ways:

- **Shared**—The BIOS enables the serial port as a regular system serial port for use with legacy serial devices, as well as to communicate with the remote management processor.
- **Not Shared**—The server uses the serial port as a standard system serial port, but remote management processor is prohibited from using the serial port.

To enable or disable the serial port sharing:

1. Power on the server by pressing the power on/off button on the front panel.

2. When POST shows the message `Press <F10> if you want to run BIOS SETUP`, press the **F10** key. If the server has an administrator password configured, the system prompts you to enter the password. If the server does not have a password configured, the main screen of the BIOS Setup Utility appears.
3. Press the right arrow (→) key to navigate to the Advanced menu.
4. Press the down (↓) key to scroll to the **Management Processor Configuration** menu. Press the **Enter** key.
5. Press the down arrow (↓) key to scroll to the **Serial Port Sharing** option. Do one of the following:
   - Press the + or - key to toggle the setting between Shared and Not Shared. Press the **Enter** key to select the appropriate option.
   - Press the **Enter** key. The Options box appears. Press the up or down arrow (↑ or ↓) key to select **Shared with BMC** or **Not shared W/BMC.** Press the **Enter** key to select the appropriate option.
6. Press the **Esc** key to return to the previous screen, or press the **F10** key to save the changes and exit Setup.

BIOS serial console configuration

1. Power on the server by pressing the power on/off button on the front panel.
2. When POST shows the message `Press <F10> if you want to run BIOS SETUP`, press the **F10** key. If the server has an administrator password configured, the system prompts you to enter the password. If the server does not have a password configured, the main screen of the BIOS Setup Utility appears.
3. Press the right arrow (→) key to navigate to the **Advanced** menu
4. Press the down arrow (↓) key to scroll to the **BIOS Serial Console Configuration** menu. Press the **Enter** key.
5. Review the serial port settings and be sure they match the serial port communications software settings used to connect to the remote management processor.

6. Press the **Esc** key to return to the previous screen, or press the **F10** key to save the changes and exit Setup.

Using the dedicated management port

The dedicated management port is a standard Ethernet 10Mb interface and is connected to the network using a standard Ethernet cable. Before using the dedicated management port you will need to determine either the DHCP IP address, set a static IP address, or use the default static IP address.

To obtain a DHCP IP address from BIOS setup:

1. Connect a standard Ethernet cable between the onboard NIC on the server rear panel and a network jack. By default, the remote management processor has DHCP enabled and automatically negotiates an IP address. To view the DHCP IP address, run the BIOS setup program or retrieve the DHCP IP address using CLI through the serial port connection.
2. Power on the server by pressing the power on/off button on the front panel.
3. When POST displays the message `Press <F10> if you want to run SETUP,` press the **F10** key. If the server has an administrator password configured, the system prompts you to enter the password. If the server does not have a password configured, the main screen of the BIOS Setup Utility appears.
4. Press the right arrow (→) key to navigate to the **Advanced** menu.
5. Press the down arrow (↓) key to scroll to the **Management Processor Configuration** menu. Press the **Enter** key.
6. Press the down arrow (↓) key to scroll to the **Set LAN Configuration** menu. Press the **Enter** key.
7. Press the down arrow (↓) key to scroll to the **IP Address** menu. Press the **Enter** key.
8. Note the DHCP assigned IP address for future reference.
9. Press the **Esc** key to return to the previous screen or press the **F10** key to save the changes and exit Setup.

To obtain a DHCP address from the CLI:

DHCP IP addresses can be viewed using the CLI. Establish a connection to the CLI using an external device such as a laptop or another computer that is connected to the serial port with a null modem cable.

1. After the connection is established, switch from the default BIOS Serial Console connection to the CLI by first pressing and releasing the **Esc** key, and then simultaneously pressing the **Shift + (** keys.
2. The remote management processor login prompt appears. The default user name is admin and the password is admin.
3. From the CLI, type `Net` and press the **Enter Key** to enter the Network configuration menu.
4. To view the DHCP IP address, type `Stat` and press the **Enter** key. The following information is displayed:

```
face...ipsrc.....IP addr........subnet.......gateway
1-et1   dhcp   16.100.250.72  255.255.252.0
16.100.248.1
```

5. Note the DHCP IP address for future reference.

To configure network access for static IP address from the CLI:

1. Static IP addresses can only be set using the CLI. Establish a connection to the CLI using an external device such as a laptop or another computer that is connected to the serial port with a null modem cable.
2. After the connection is established, switch from the default BIOS Serial Console connection to the CLI by first pressing and releasing the **Esc** key, and then simultaneously pressing the **Shift + (** keys.
3. The remote management processor login prompt appears. The default user name is admin and the password is admin.
4. After logging in, press and release the **Esc** key and press the **Shift + (** keys simultaneously to switch from BIOS serial console to the CLI.
5. From the CLI, type `Net` and press the **Enter Key** to enter the Network configuration menu.
6. Enter `DHCP disable` and press the **Enter** key. DHCP is now disabled.
7. Verify DHCP is disabled by using the `stat` command. If DHCP is disabled the default IP address 192.0.0.65 is displayed.

8. To set a static IP address, type `set ip <ip address> <net mask> et1` and press the **Enter** key.

Using Integrated Lights-Out 100i

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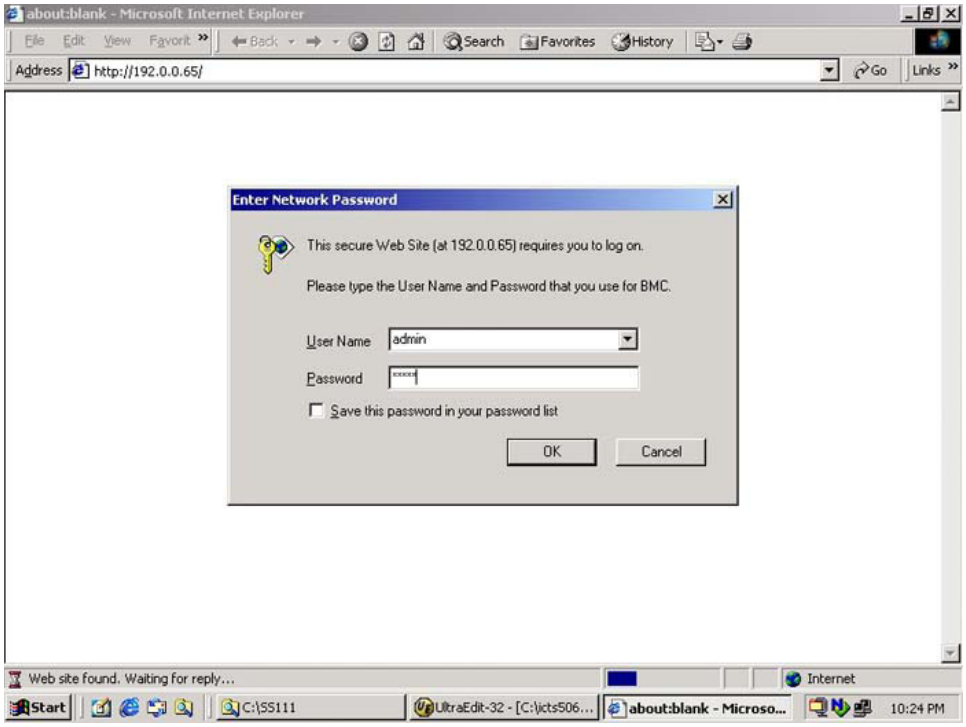
Logging in to the remote management processor

You can log in to the remote management processor through a web browser ("Logging in through a web browser" on page 13) or through the CLI ("Logging in through the CLI" on page 14). If you are unsure of your DHCP IP address refer to the "Using the dedicated management port (on page 9)" section.

Logging in through a web browser

1. Browse to the IP address of the remote management processor to access the login screen.

2. Enter your user name and password. The default user name is admin, and the default password is admin.



Logging in through the CLI

To log into the remote management processor through the CLI and enter Terminal mode:

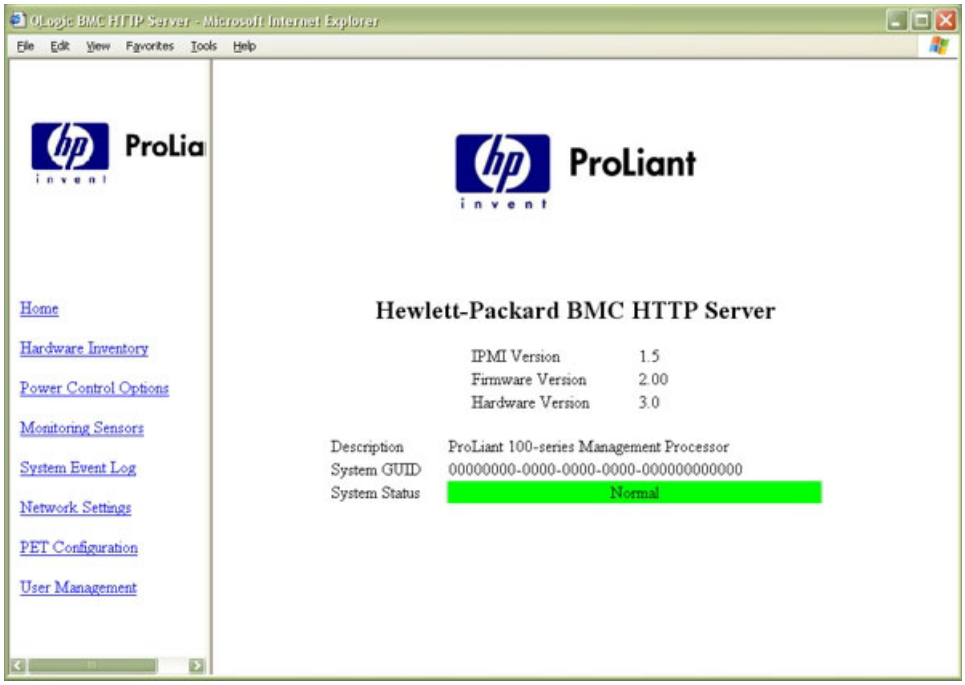
1. Establish a connection to the remote management processor by launching a telnet session.
2. Enter the user name at the login: prompt. The default user name is admin.
3. Enter the password at the password: prompt. The default password is admin. The command prompt displays.

To exit the CLI and enter Console mode, do one of the following:

- Press and release the **Esc** key and then press the **Shift +** (keys simultaneously.
- Enter the `quit` command at the command prompt.

Browser main menu options

From the main menu, you can access all of the basic remote management capabilities of the remote management processor.



Option	Description
Home	Returns to main menu
Hardware Inventory	Detects hardware inventory (CPU only)
Power Control Options	Accesses system power control options

Option	Description
Monitoring Sensors	Lists all sensor information, including type, name, status, reading, and PEF settings
System Event Log	Displays the system event log
Network Settings	Accesses the network parameter settings screen
PET configuration	Accesses the PET destinations and alert policy table
User Management	Accesses the user configuration screen

CLI commands

CLI commands are entered at the command prompt that displays after a successful login to the remote management processor. For more information on logging in to the remote management processor, refer to the "Logging in to the remote management processor (on page 13)" section.

The following table lists and describes the CLI commands. The commands are described in further detail in the following sections. Single letter abbreviations can be used rather than the entire command word. For example, *c* can be used rather than entering `Changepassword`. CLI commands are not case-sensitive.

Command	Action
`C[hangePassword]`	Changes password for Administrator account
`P[ower]`	Displays the server power status
`P[ower] off`	Powers off the server
`I[pmicommand] <command data>, where <command data> is a supported IPMI command`	Executes an IPMI command
`SEN[sorStatus]`	Displays the system sensor status

Command	Action
SD[RRead]	Displays the Sensor Data Record
SEL[Read]	Displays the system event log
N[etwork setup]*	Sets up the network
R[eset] warm	Resets the server
R[eset] cold	Powers off the server and powers on the server after a short time has passed
V[ersion]	Shows the management firmware version
H[ELP]	Displays a list of commands
Q[UIT]	Logs out of the remote management card

*** NOTE:** Entering network setup to configure the network results in the command prompt to INET>. For information on additional commands that can be entered at the INET> prompt, refer to the "Using the system event log (on page 22)" section.

Changing the password

The user password is stored in nonvolatile memory and can be changed through a web browser ("Changing the password through a web browser" on page 17) or the CLI ("Changing the password through the CLI" on page 18).

Changing the password through a web browser

1. Click **User Configuration** on the main menu navigation bar.

2. Input the password as indicated, and click the **Set** button to save the changes.

Changing the password through the CLI

Passwords are case-sensitive and can contain up to 16 characters. To change the user password through the CLI:

1. Log into the CLI as described in the "Logging in to the remote management processor (on page 13)" section.
2. At the command prompt, enter `Changepassword.`
3. Enter the current password when prompted.
4. Enter the new password when prompted.
5. Reenter the new password when prompted.

Using the remote console

You can access the remote console through either the BIOS console text redirection functionality or a Microsoft® Windows® Server 2003 text-based console.

BIOS console text redirection through telnet

BIOS console text redirection functionality enables you to view the entire boot process remotely and make changes in the BIOS Setup Utility from a remote computer. This tool is valuable in troubleshooting and managing servers remotely.

To configure the BIOS Setup Utility on the target ProLiant DL145 G1 system:

1. Press the **F10** key during POST to enter the BIOS Setup Utility.
2. Press the right arrow (→) key to navigate to the Advanced menu.
3. Press the down arrow (↓) key to scroll down to the BIOS Console Redirection, and press the **Enter** key to enter the sub-menu.
4. Set **Com Port Address** to **BMC USI port**.
5. Press the **Esc** key to return to the previous screen, or press the **F10** key to save the changes and exit Setup.
6. Follow the instructions in the "Additional network settings (on page 24)" section to set or obtain a valid IP address.
7. Press the **F10** key to save the changes and exit Setup.
8. Now that console redirection has been configured, you can view the boot process remotely by establishing a telnet session to the IP address of the remote management processor from a client PC. Consult your operating system documentation for further details on establishing telnet sessions.

   NOTE: If you encounter problems logging in to the remote console, be aware that some telnet programs might require you to enable their `send line feed at end of line` option. If the remote console does not respond to the Enter key, try setting this option in your telnet program.

   NOTE: You must follow the instructions in the "Additional network settings (on page 24)" section to configure the network access properly.

Microsoft Windows EMS management

Microsoft® Windows® Server 2003 provides text-based console access. You can connect a laptop to the remote management processor to perform basic management tasks on the ProLiant DL145 G1 target system. The Windows® EMS Console, if enabled, displays the processes that are running and enables administrators to halt processes. This capability is important in cases in which video, device drivers, or other operating system features have prevented normal operation and normal corrective actions.

To enable Windows® EMS management on the target ProLiant DL145 G1 system:

1. Press the **F10** key during POST to enter BIOS Setup Utility.
2. Press the right arrow (→) key to navigate to the Advanced menu.
3. Press the down arrow (↓) key to scroll down to the BIOS Console Redirection option, and press the **Enter** key to enter the submenu.
4. Set Com Port Address to **BMC USI port**.
5. Scroll down to **Continue C.R.** after POST, and set it to **ON**.
6. Press the **Esc** key to return to the previous screen, or press the **F10** key to save the changes and exit Setup.

You can now view the Windows® EMS management console remotely by establishing a telnet session to the IP address of the target server from a client PC. Consult your operating system documentation for further details on establishing telnet sessions.

NOTE: If you encounter problems logging in to the remote console, be aware that some telnet programs might require you to enable their `send line feed at end of line` option. If the remote console does not respond to the Enter key, try setting this option in your telnet program.

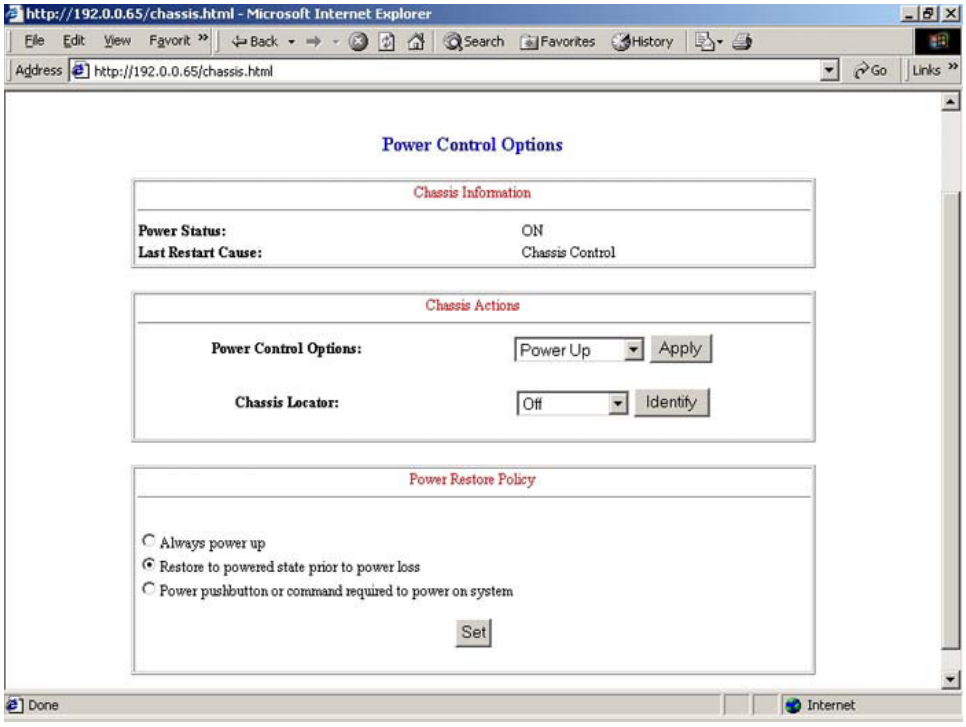
NOTE: You must follow the instructions in the "Additional network settings (on page 24)" section to configure the network access properly.

Controlling server power remotely

Using a web browser or the CLI, you can remotely operate the power button of a host server. Virtual power support enables you to power on, power off, and power cycle the host server. This virtual power support operates independently of the state of the operating system.

Controlling server power from a web browser

1. Click **Power Control Options** on the main menu navigation bar.
2. Follow on the on-screen options to power the server on or off, reset the server, turn the chassis locator ON or OFF, and set the server actions after a power failure to always power back up, restore to the previous power state, or require a power button press.



Controlling server power through the CLI

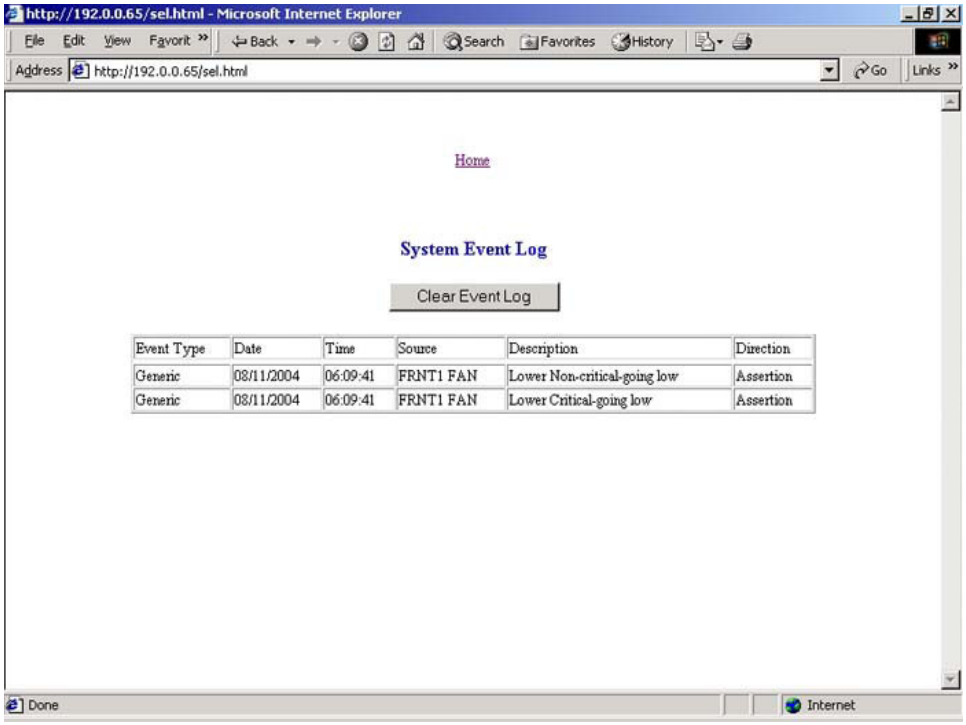
1. Log into the remote management processor CLI as described in the "Logging in to the remote management processor (on page 13)" section.
2. At the command prompt, enter one of the following commands:
   - `power on`–Powers on the server
   - `power off`–Powers off the server
   - `reset warm`–Resets the server
   - `reset cold`–Powers off the server and resets the server after a short time has elapsed

Using the system event log

The system event log lists a short description of each system event. Events that are recorded include system resets, system power loss, user logins, and unsuccessful login attempts.

Accessing the system event log from a web browser

Click **System Event Log** on the main menu navigation bar.



Accessing the system event log from the ROM-based setup

1. In the BIOS setup utility, press the right arrow (→) key to navigate to the **Advanced** menu.
2. Press the down arrow (↓) key to scroll to the **DMI Event Logging** submenu. Press the **Enter** key.
3. Press the down arrow (↓) key to scroll to the following available setup items. The available options include:
   - View DMI event log
   - Event Logging

- ECC Event Logging
- Mark DMI events as read
- Clear all DMI event logs

4. Press the **Enter** key to view the options.
5. Press the **Esc** key to return to the previous screen, or press the **F10** key to save the changes and exit Setup.

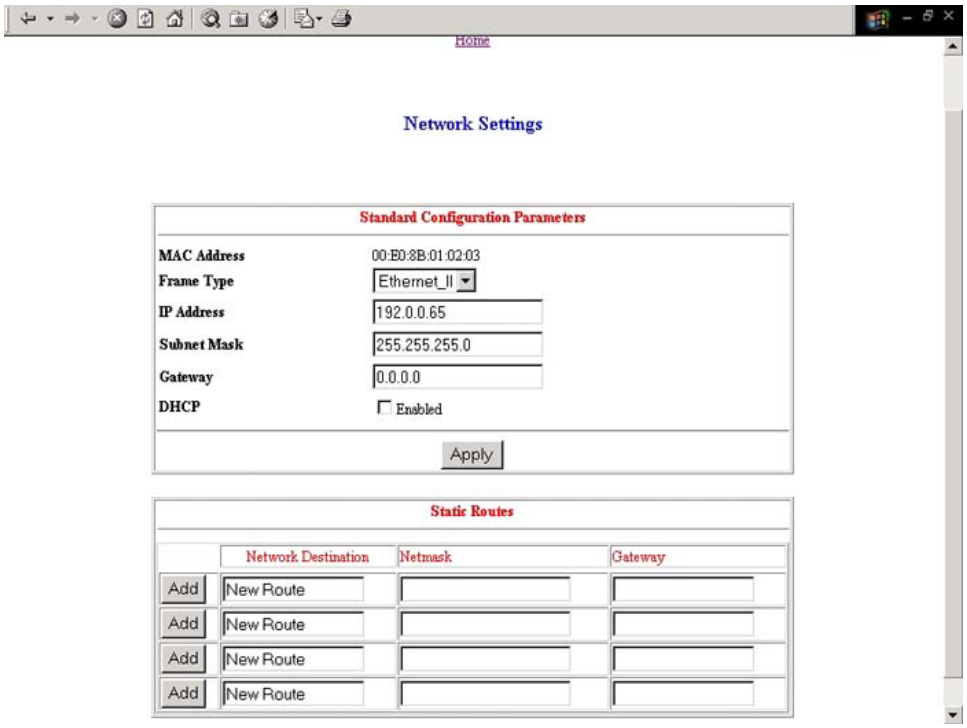
You can also view the system event log by entering the `selread` command at the remote management card CLI.

Additional network Settings

After completing the instructions in the "Using the dedicated management port (on page 9)" You can configure additional network settings using a web browser or the CLI.

Configuring network settings using a web browser

Click **Network Settings** on the main menu, and input new settings on the Network Settings screen.



Configuring network settings using the CLI

1. Log in to the remote management processor CLI as described in the "Logging in to the remote management processor (on page 13)" section.
2. At the command prompt, enter network setup. The `INET>` prompt appears.
3. Enter any remote management processor network setup command. The `INET>` CLI commands are case-sensitive.

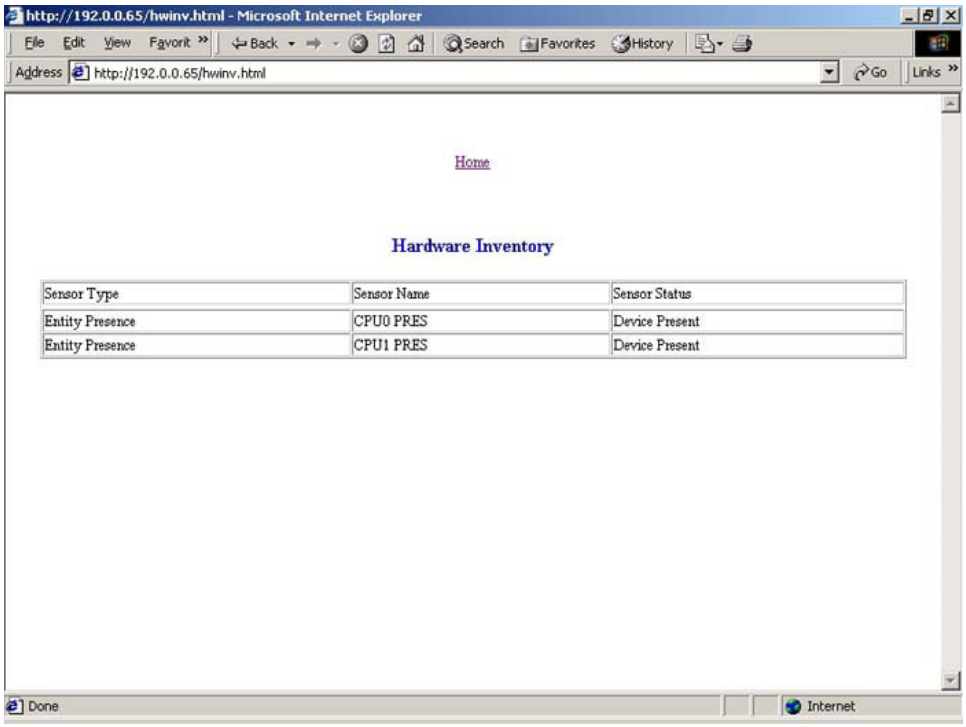
Command	Action
`state`	Displays the current setup information
`delay`	Sets the delay between two pings from the remote management processor
`length`	Sets the default ping packet length
`rtadd`	Manually adds an IP route to the table
`rtdel`	Manually deletes an IP route from the table
`routes`	Displays the IP route table
`setip xxx.xxx.xxx.xxx yyy.yyy.yyy.yyy, where xxx.xxx.xxx.xxx is the IP address and yyy.yyy.yyy.yyy is the subnet mask`	Sets the remote management processor IP address and subnet mask
`setdgw`	Sets the remote management processor default gateway to Enable DHCP or Disable DHCP
`dhcp`	Obtains an IP address automatically
`setdl`	Sets LAN downloader configuration
`vsi`	Displays the virtual floppy configuration
`setvsi`	Sets the virtual floppy configuration
`help general`	Displays menu help
`help diagnostics`	Displays diagnostic commands
`help telnet`	Displays telnet commands
`firewall`	Displays the current firewall settings
`setfirewall`	Sets the firewall parameters

Command	Action
`quit`	Quits network setup

Hardware Inventory page

The Hardware Inventory Page enables you to remotely identify the presence of processors on a target ProLiant DL145 G1 server.

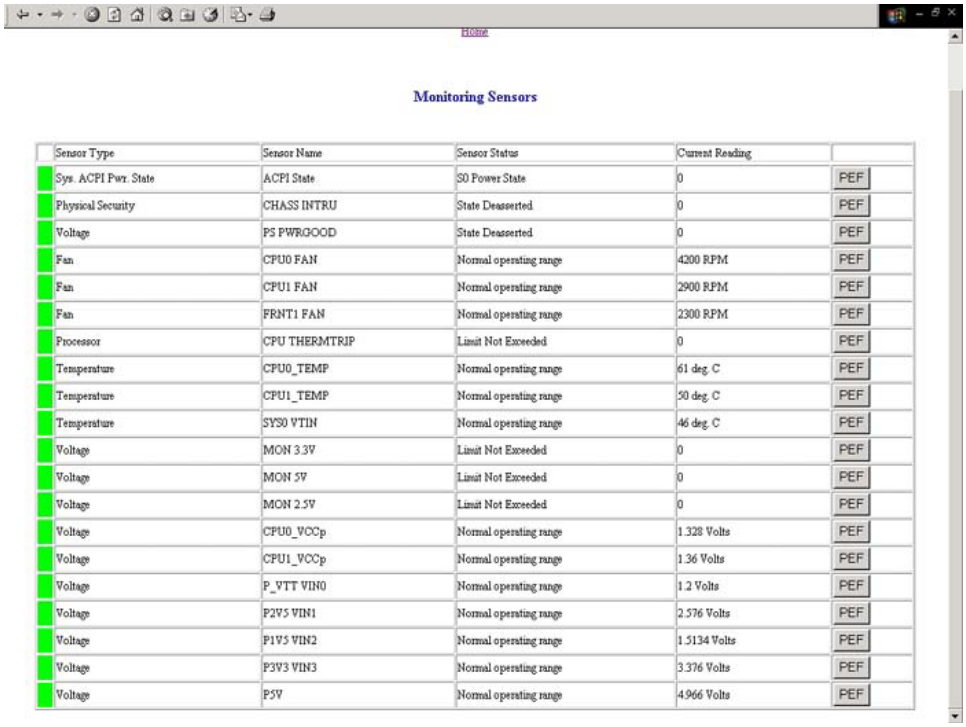
To access this page from a web browser, click **Hardware Inventory** on the main menu navigation bar.



Monitoring sensors feature

The Monitor Sensors page enables remote monitoring of the current status of major sensors of a target ProLiant DL145 G1 Server.

To access this page from a web browser, click **Monitoring Sensors** on the main menu navigation bar.

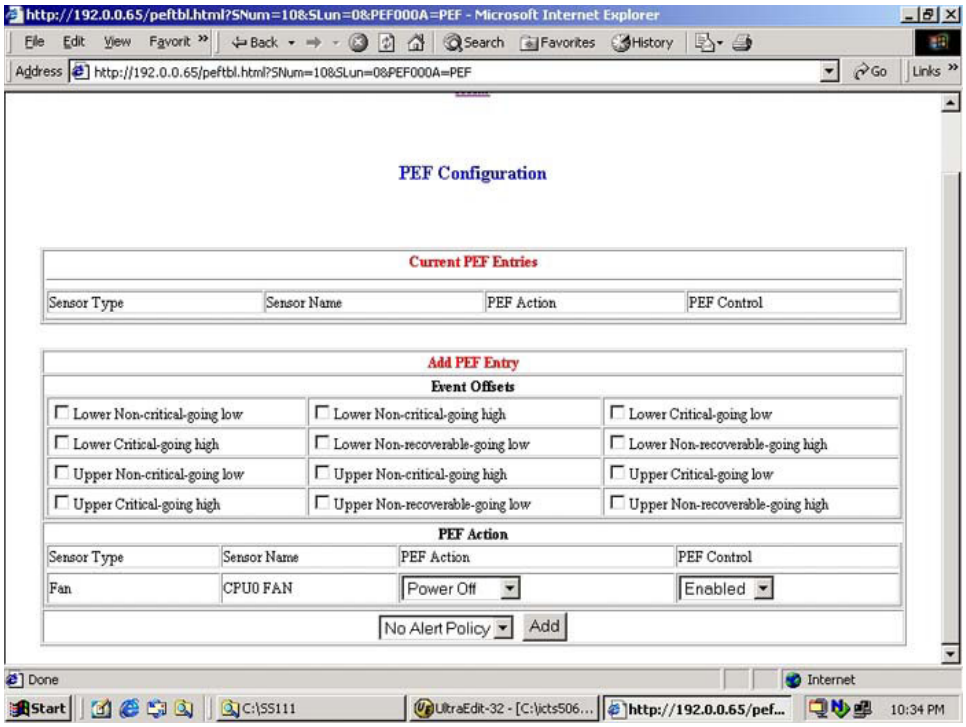


Sensor Type	Sensor Name	Sensor Status	Current Reading	
Sys. ACPI Pwr. State	ACPI State	S0 Power State	0	PEF
Physical Security	CHASS INTRU	State Deasserted	0	PEF
Voltage	PS PWRGOOD	State Deasserted	0	PEF
Fan	CPU0 FAN	Normal operating range	4200 RPM	PEF
Fan	CPU1 FAN	Normal operating range	2900 RPM	PEF
Fan	FRNT1 FAN	Normal operating range	2300 RPM	PEF
Processor	CPU THERMTRIP	Limit Not Exceeded	0	PEF
Temperature	CPU0_TEMP	Normal operating range	61 deg. C	PEF
Temperature	CPU1_TEMP	Normal operating range	50 deg. C	PEF
Temperature	SYS0 VTIN	Normal operating range	46 deg. C	PEF
Voltage	MON 3.3V	Limit Not Exceeded	0	PEF
Voltage	MON 5V	Limit Not Exceeded	0	PEF
Voltage	MON 2.5V	Limit Not Exceeded	0	PEF
Voltage	CPU0_VCCp	Normal operating range	1.328 Volts	PEF
Voltage	CPU1_VCCp	Normal operating range	1.36 Volts	PEF
Voltage	P_VTT VIN0	Normal operating range	1.2 Volts	PEF
Voltage	P2V5 VIN1	Normal operating range	2.576 Volts	PEF
Voltage	P1V5 VIN2	Normal operating range	1.5134 Volts	PEF
Voltage	P3V3 VIN3	Normal operating range	3.376 Volts	PEF
Voltage	P5V	Normal operating range	4.966 Volts	PEF

Platform event filtering configuration pages

Each of the PEF pages enables the configuration of the remote management processor to take selected actions on event messages that it receives or has internally generated. The actions include operations such as system power-off, system reset, and triggering the generation of an alert.

To configure a PEF for a particular sensor, click the PEF button on the far right of that sensor on the Monitoring Sensors page, which opens the PEF Configuration page for that sensor.



The PEF Configuration page has two sections for the sensors:

- Current PEF Entries
- Add PEF Entry

The Current PEF Entries section includes:

- Sensor Type
- Sensor Name
- PEF Action
- PEF Control

Initially, there are no entries in the Current PEF Entries section because no PEFs have been defined. When PEF entries are defined, the PEF Control field is active and allows individual entries to be enabled, disabled, and deleted.

The Add PEF Entry section contains two main subsections:

- **Event Offsets** are trip points (movements across thresholds) that define what type of sensor event triggers an action. The information in this section varies from sensor to sensor. Not all checkboxes are available for all sensors. You can select any of the available checkboxes.
- **PEF Action** has the same information for all sensors:
  - **Sensor Type** (in this case, it is "Fan").
  - **Sensor Name** (in this case, it is "CPU0 FAN").
  - **PEF Action**. This dropdown menu enables you to select from Power Off (selected for this example), Power Cycle, Hard Reset, and Send Alert (requires a systems management console supporting IPMI 1.5).
  - **PEF Control**. This setting allows you to enable or disable each sensor.
  - **Alert Policy**. This dropdown menu, by default, shows No Alert Policy if alerts are not defined on the PET Configuration page (as in this example). If alerts are defined in the PET Configuration page, then you can select from your defined alert policies for this particular sensor and PEF.
  - **Add**. This button adds the new entry to the PEF Current Entry table at the top of the page.

Platform Event Trap Configuration page

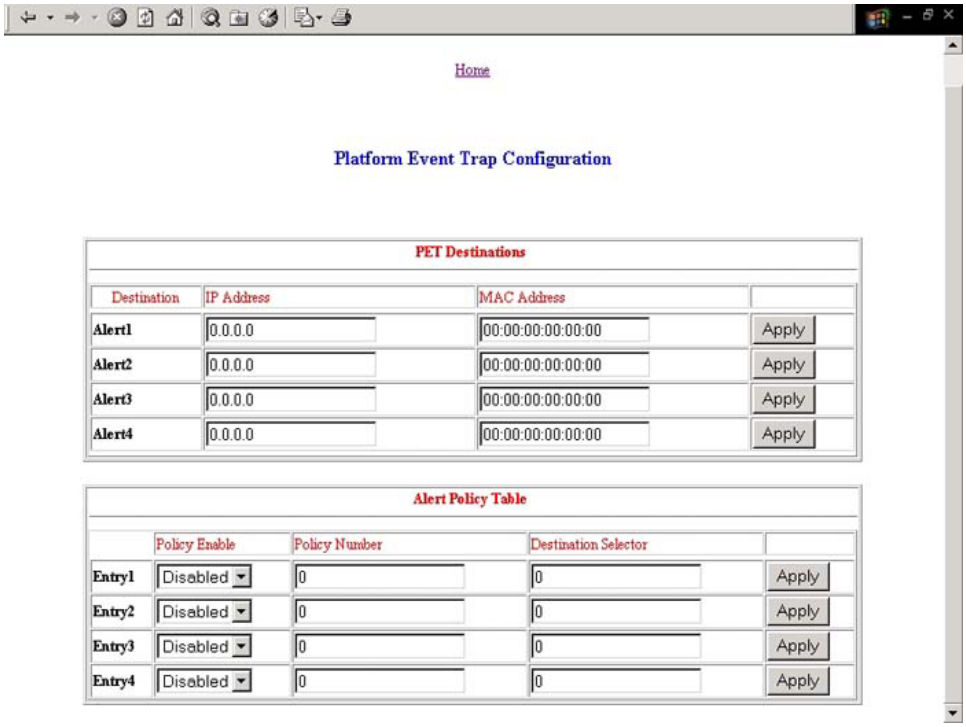
The PET Configuration page enables an alarm or specified condition originating on the ProLiant DL145 G1 server to alert a systems management console that supports IPMI 1.5.

To access this page from a web browser, click **PET Configuration** on the main menu navigation bar.

The PET Destinations section indicates to the remote management processor where to send the PET if it is configured to send the trap to a remote system. This section has up to four entries specifying IP and MAC addresses. The address to use is selected in the Alert Policy Table (shown in the figure).

The Alert Policy Table section has three fields:

- **Policy Enable**–This field enables you to selectively enable and disable trap forwarding.
- **Policy Number**–This field enables you to choose a policy that will be used in PEF configuration.
- **Destination Selector**–This field specifies where to send the PET trap from the destinations defined in the PET Destination section.



Acronyms and abbreviations

BIOS

Basic Input/Output System

BMC

base management controller

CLI

Command Line Interface

DHCP

Dynamic Host Configuration Protocol

EMS

Emergency Management Services

IP

Internet Protocol

IPMI

Intelligent Platform Management Interface

MAC

medium access control

NIC

network interface controller

PEF

Platform Event Filtering

PET

Platform Event Trap

POST

Power-On Self-Test

TCP/IP

Transmission Control Protocol/Internet Protocol

TFTP

Trivial File Transfer Protocol

USI

universal serial interface

VSI

virtual storage interface

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